An Essay on Opium and its Officinal Preparations.

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In selecting Opium as the subject of an Essay it is not with an expectation of communicating much, if any thing, upon this subject not before known. I am indebted to the experiments and experience of others for most that I shall state with regard to it, and from their books shall freely extract whatever suits my purpose. — My attention was particularly arrested by the remarks of Profs. Coxe and Hare, in their last courses of lectures, on the subject of Denarcotised Opium and by a communication from the latter gentleman in Silliman's "Journal for Science and Arts" for June 1827 in which he gives his experience with the medicine and also a letter from Prof. Dewees addressed to him, in which four interesting and striking cases were related of its successful employment.

It appeared to me that a further trial of it was very desirable and accordingly I prepared some with the intention of testing it with such persons as had an idiosyncrasy for opium in its common forms of exhibition. The result of my limited experience with it shall be presently communicated.

Opium has been employed as a medicine from time immemorial. It is the product of the Papaver somniferum or Poppy. This plant accommodates itself readily to great diversities of soil and climate and hence is found growing in various situations in almost every country. Opium of an excellent quality has been made from the cultivated poppy of the United States. The Poppy is however probably a native of the south of Asia and the neighbouring

regions, though found wild in some of the sections of Europe. Two kinds of Opium are found in commerce the Turkey and East India; the former of which is greatly preferred. Although the manner in which Opium is prepared from the poppy in the eastern countries is still involved in some doubt, we have reason to believe that the best is obtained by making incisions into the leaves, stalks and capsules of the plant, out of which flows a milky fluid with which they abound, and which, being exposed to the air for a few days, thickens and becomes a dark, tenacious mass, which is then enveloped in leaves and constitutes the opium of the shops. By a decoction of the whole plant and subsequent evaporation of the water, an opium is procured much inferior

to that obtained by the other process, with which the genuine opium is sometimes adulterated.

The seeds of the poppy yield a considerable quantity of fixed oil by expression and are used only as an emulsion, possessing none of the narcotic principle.

Much controversy has been maintained with regard to the effects of opium upon the living system. Exhibited internally in adequate doses, the pulsations of the heart and arteries are first rendered quicker, fuller and stronger, and afterwards slower, than at the time of taking it. With the increased frequency of pulse, the heat of the body is generally somewhat augmented. The Respiration is little affected except a large dose has been taken, towards the

conclusion of the operation of which, it becomes slow, stertorous and laborious. The appetite and digestion, from unusually large or frequently repeated doses, generally become impaired, and vomiting is often induced: the discharges from the intestines are diminished or suspended — secretion and excretion are impeded in every part of the system except the skin, the discharge from which is evidently augmented, sometimes preceded or attended with a sense of pricking or itching, terminating now and then in a species of miliary eruption. The hilarity of the mind is by degrees augmented and continues to increase if the dose be considerable, until the delirium of intoxication is produced, which, as when resulting from intoxicating liquors, is attended in different

constitutions with different symptoms. It is however more generally productive of a pleasant and joyous state of mind, than the contrary. After these effects have continued for some time they are succeeded by others of a very opposite nature: the mind becomes gradually languid and dull, the body averse to motion, little affected by customary impressions, and inclined to sleep. If the dose has been considerable, all these symptoms continue to increase, and tremors, convulsions, vertigo, stupor, insensibility and deprivation of muscular action appear variously complicated, and in various degrees, proportioned to the excess of the dose and peculiarity of the constitution of the sufferer.—

Such is the account given by Crumpe

of the effects of opium; and it goes sufficiently to prove that its first action is stimulant; and in many particulars its effects resemble those of wine. It is indeed actually used by some of the oriental nations for the same purpose for which we employ stimulating potations. "By the Turks in particular, whose religion prohibits the use of our more generous beverages, we are told opium is employed to inspire courage, or to invigorate fortitude, to soothe sorrow or dissipate misfortune, to awaken the fancy to more brilliant exertions, or to create that mild composure and serenity of feeling, so desirable after the cares and solicitudes of an active, perplexing and arduous scene. Like spirituous liquors among other people, it is in short, the support of the coward,

the solace of the wretched, and the daily source of intoxication to the debauchee. Thus habitually taken nearly the same moral and physical debility is experienced as from any species of inebriating liquor. But tho' the analogy between opium and wine to a certain extent exists, there is in several respects a material difference between the two articles, and in no dose, or by any mode of administration, can they be so assimilated as to answer precisely the same purposes". - Such being the effects of opium in a state of health, it is no wonder recourse has been had to it in a state of disease in order to procure sleep, mitigate pain, allay inordinate action, and diminish morbid sensibility. - Accordingly we find it recommended

in almost every disease or accident to which humanity is subject; and in many of them it seems entirely indispensable -- Among these may be enumerated Intermittent Fever, Pneumonia (after previous depletion) some stages of Rheumatism, most of the Exanthemata, after the febrile action is reduced by antiphlogistic measures, Dysentery, Cholera, Diarrhoea, Colic, Nephritis, Tetanus, Phthisis Pulmonalis, Scrofula, Diabetes and numerous other diseases.

That it is of itself a cure for all these diseases, no one pretends, but it is an indispensable auxilliary to other medicines and in some of the cases is principally to be depended on -

Opium is often used in substance, and to this form of its application there is no objection, except that

it is rather slower in its operation; it is however more permanent in its effects and is not so apt to be rejected by the stomach, especially if it has been prepared for some time – and in diseases of the alimentary canal it answers a better purpose in this, than in any other form of administration particularly when used in the celebrated preparation called Dover's powder which is made by combining equal parts of opium and Ipecac with eight parts Sulphas Potassæ –

This powder is of immense advantage as an anodyne and sudorific –

By subjecting opium to diluted alcohol or Proof Spirit it is dissolved and forms a tincture commonly called Laudanum, which is much employed –

The Elixir Paregoric is an ammoniated

or camphorated tincture of opium — it is a popular medicine but might very well be dispensed with, as in all cases in which it is indicated the Thebaic Tincture might be used —

The Black Drop is another preparation of Opium which has been long used — it was first employed by Van Helmont. It is made by dissolving Opium in acetic acid and adding some nutmeg, saffron &c — It is a preparation of very great consequence being distinguished by the property of being well received by the stomach when laudanum cannot be borne, and by its not being so apt to leave behind it distressing consequences, such as headaches &c — This property is ascribed to the acid menstruum in which it is dissolved —

Besides these preparations of opium there are several others, in some of which alkalis are combined, which are said to possess advantages not found in any other mode of administration --

The average dose of opium in substance for an adult is one grain.

Dovers powder ten or twelve grains -

Laudanum twenty five drops -

Elixir Paregoric one drachm -

Black Drop from ten to twelve drops -

But the doses vary immensely according to the nature of the disease, and constitution of the patient - In Tetanus for instance in order to be serviceable the doses should be very large indeed. Prof. Gibson in his Lectures relates a case of one of his patients in which he commenced

with Two Hundred drops of laudanum of the usual strength, directing the dose to be repeated whenever any symptom of spasm appeared – from this he increased the dose until the patient took a wine glass full at a time whenever he felt any disposition to a return of the spasm – and by this treatment his life was saved –

Habitual use renders the system unsusceptible of the original effect of opium, so that people under painful chronic diseases who have long taken opium as a palliative, find it necessary in many instances, to increase by degrees to ten or twenty times the quantity, which at first afforded them relief, before the same benefit can be certainly obtained – Persons intemperate in opium consume enormous quantities of the drug with impunity at least

as to its present effects. The opium eaters of Asia drag out a miserable existence under the daily employment of doses, a small part of which would have originally proved fatal to them. Alibert relates that those who thus habitually use opium are less susceptible of contracting certain diseases particularly Syphilis.

Upon the whole we may say that Opium as a medicine stands unrivalled. we can hardly find a disease in which it is not proper in some stage to employ it. it bears away the palm as an anodyne of pain, an alleviator of distress, a procurer of sleep. it is, in short, with skilful and enlightened management the "magnum Dei donum".
But we seldom find so great a

good without some accompanying evil. And so it is with Opium - after all the praise which it has so justly received, it has been found impossible for some people to take it, without experiencing violent pain in the head, sickness of the stomach, nervous tremors &c. in whatever dose it is administered, - while with every one, its first effects are more or less of a stimulant nature - To determine the principle in it which thus affects the human system, and to separate it from that which acts merely as a sedative has ever been a desideratum the attainment of which could only be anticipated by a careful analysis of the drug; and accordingly it is to the indefatigable perseverance, and the precision of modern chemists

that we are indebted for the accurate knowledge now possessed of the composition of opium as well as many other vegetable substances. They have discovered several new vegetable alkalies, such as Quinine Cinchonine, Emetine &c which contain the whole virtue of the respective medicines from which they are extracted, and the patient therefore instead of being obliged to swallow a disagreeable and inert, if not hurtful, mass, is now subjected to that only which is efficacious if judiciously prescribed.

This fact of itself shows sufficiently the vast importance of modern discoveries and improvements to mankind. It is to the French Chemists that the credit is principally due for having effected these analyses and among them may be mentioned as most

distinguished Pelletier, Caventou & Robiquet.
It has been found that Opium contains two proximate principles, Morphine and Narcotine, to which its active properties are believed to be due. The Morphine exists in the opium in combination with Meconic acid constituting the meconiate of Morphine. This neutral salt is active tho' the pure morphine is more so. It may be separated from the acid by Magnesia or Ammonia. The colouring matter with which it is entangled is removed, by washing with cold water and digestion with weak alcohol. After this the morphine is dissolved by boiling hot alcohol, from which it crystallizes in cooling.
One half grain of Morphine is said to produce as great an effect as the largest dose of Opium, differing from

it in this respect, that its operation is purely sedative, calming irritation and composing to rest without any of the distressing consequences of opium itself. Magendie proposed an officinal preparation of it in the form of Acetate of Morphine. Narcotine on the contrary is a stimulant, and to it is ascribed all the unpleasant ultimate effects that are produced by opium. If this be admitted (and the few experiments that have been made seem to prove its truth) it would appear that all that is necessary, in order to free opium from all hurtful properties, is to extract from it the Narcotine it contains; and this according to Robiquet can be readily effected by digesting it in Ether. Narcotine being very soluble in Ether, whereas Morphine is not.

In preparing the Denarcotised Laudanum I followed the direction of Prof. Hare – "by shaving the opium fine, and subjecting it four successive times to as much rectified Ether as would cover it, keeping it near the temperature of ebullition and allowing each portion to act upon it for about 24 hours –
The first case in which it was used was with a patient of my preceptor Dr Mannan – It was a case of Mania a Potu in which an anodyne was indicated – Upon seeing the appearance of laudanum, in the vial which was produced, the Mother of the young man begged that it might not be given him "as laudanum always made Thomas more crazy and ungovernable".
She was assured that this was a different preparation from laudanum and

accordingly a large dose was administered with the happiest result producing a state of quietude—

Case 2nd — — a gentleman aged about 50 years, had long been afflicted in a very singular manner by spasm, from which he suffered immense distress, but was prevented employing opium on account of the very unpleasant consequences that resulted to him after its exhibition; so that he preferred enduring the disease to which he was subject rather than to attempt an alleviation of it by anodynes— To this patient it was proposed to exhibit the "Denarcotised Laudanum", which was done in doses of a drachm with unequivocal advantage— He expressed the most rapturous praise for the medicine, and has since continued to employ it whenever occasion required with unabated advantage—

Case 3d. — — a lady, who had long been afflicted with a cough & pulmonary disease, could not employ opium in any shape — To her the Denarcotised tincture was exhibited with the happiest result — Cases 4th & 5th were nearly similar to the foregoing — the patients found that opium deprived of Narcotine proved salutary to them, altho' in its common form the effects were distressing —

From the preceding cases, added to the experience of others, with the Denarcotised Opium, it would seem as if that which has so long been a desideratum was now obtained; and should continued trials still prove the same thing, and add confirmation to fondly cherished hope, we shall undoubtedly see it speedily introduced as a most valuable pharmaceutic preparation –

Candour compels me to state that in one case this form of opium proved equally unpleasant with all others – the man, however, could only be persuaded to take one dose as he had an utter dread of it, and the unpleasant consequences might have been the result of imagination, in some measure –

Perhaps the addition of Acetic Acid in imitation of the Black Drop might be still an improvement, – but of this I have no experience – The Acetate of Morphine, I find, is considerably employed in Philadelphia –

An Apothecary by the name of Battley in London has made a preparation of opium which he calls the "liquor Opii sedativus", which is said to be devoid of stimulating properties. The manner of preparing this medicine is concealed but it has been supposed that it owes its efficacy to the acetate of Morphia.

Upon being called to a person who has taken too much opium, so as to produce alarming consequences, the first step to be taken is to rid the stomach of the drug, which may be most effectually done by washing it out by means of the stomach pump and immediately exhibiting a powerful emetic - say of the Sulphate of Zinc. Tartar Emetic in the quantity of 15 or 20 grs. may also be administered

in the form of an enema and will assist in getting clear of the opium particularly if it has been taken a considerable time. After the poison has been discharged the vegetable acids may be administered with propriety to assist in removing the constitutional effects. Strong Coffee and Tea may be freely given, also cordial stimulants that are not of the narcotic kind, such as Ammonia &c. The patient should be kept erect and moved frequently and the skin excited with friction, rubefacients or blisters. Bloodletting has been prescribed with advantage particularly for such as are plethoric or where the comatose tendency is strong.

Dr. Chapman recommends a combination of Tartar Emetic and Ipecacuanha, given in

large doses as being one of the most speedy and active of our Emetics - When the patient can swallow, large quantities of tepid water will sometimes induce vomiting when other means fail - A cataplasm of tobacco over the epigastrium has been employed for the same purpose - A tickling the fauces with a feather will often succeed in inducing vomiting - Cases are recorded, and some have recently occurred, in which by dashing cold water over the body & making cold applications to the head, the sensibility of the system has been aroused when in a state of very great prostration -

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The cases mentioned under the head of Juniperus Virginiana – evince the efficacy of the article – but it may be questioned if the same benefit would not equally have been demonstrated by that of the Ol: Terebinthina. – If so, do we need two articles, apparently so closely allied in their effects – As to the Cedar Apple – its anthelmintic powers may be regarded, as yet, sub judice –

Paped March 5th. 1828